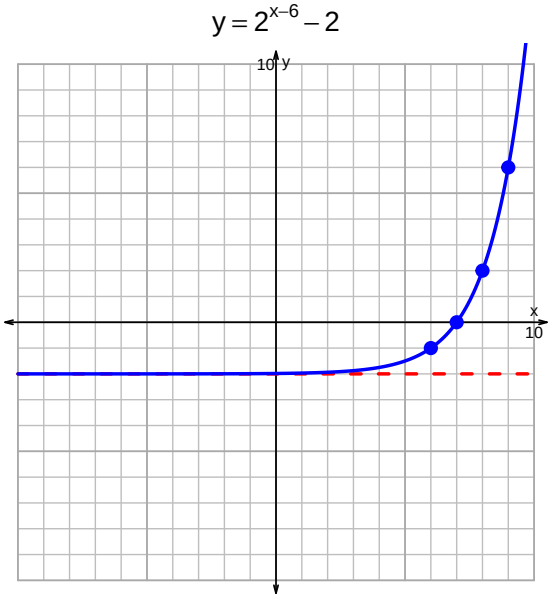
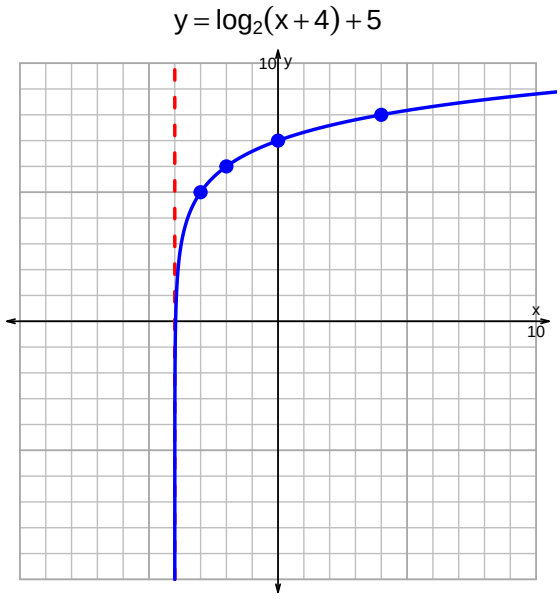
Name: Date:

s18: EXP LOG (SLTN v300)

1. (10 pts) Graph $y = 2^{x-6} - 2$ and $y = \log_2(x+4) + 5$ on the grids below. Also, draw any asymptotes with dashed lines.





Somewhat useful hint: $2^3 = 8$, *and thus* $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$11 = \left(\frac{3}{5}\right) \cdot 10^{4t/7}$$

Divide both sides by $\frac{3}{5}$.

$$\frac{11 \cdot 5}{3} = 10^{4t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 5}{3}\right) = \frac{4t}{7}$$

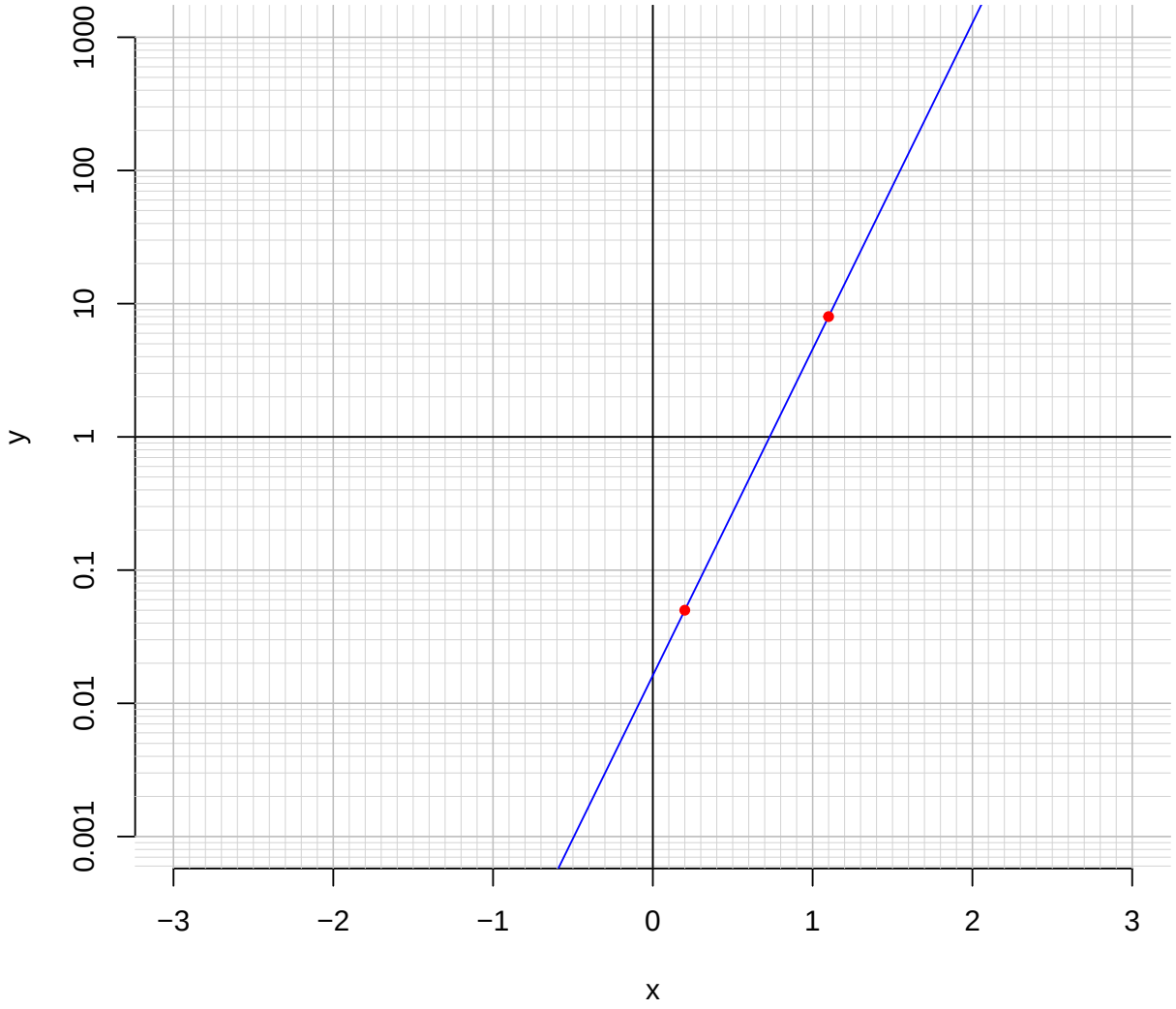
Divide both sides by $\frac{4}{7}$.

$$\frac{7}{4} \cdot \log_{10}\left(\frac{11 \cdot 5}{3}\right) = t$$

Switch sides.

$$t = \frac{7}{4} \cdot \log_{10}\left(\frac{11 \cdot 5}{3}\right)$$

3. (10 pts) An exponential function $f(x) = 0.0162 \cdot e^{5.64x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.1)$.

$$f(1.1) = 8$$

b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{5.64} \cdot \ln\left(\frac{x}{0.0162}\right)$$

Using the plot above, evaluate $f^{-1}(0.05)$.

$$f^{-1}(0.05) = 0.2$$